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For: VIDEO/AUDIO DATA RECORDING/REPRODUCING APPARATUS

**SUBMISSION OF VERIFIED ENGLISH TRANSLATION OF U.S. PROVISIONAL
APPLICATION NO. 60/464,111**

Commissioner for Patents
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Sir:

In accordance with the provisions of 37 CFR 1.53(c) and 1.78, the applicant submits herewith a verified Translation of U.S. Provisional Application No. 60/464,111 in accordance with the requirements of 35 U.S.C. § 1.53(c).

Respectfully submitted,

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VERIFICATION OF A TRANSLATION

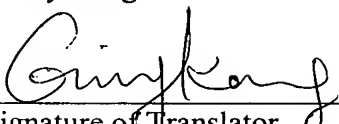
I, the below undersigned translator, hereby state and declare that:

- a) My name and post office address are as stated below.
- b) That I am well acquainted with the English and Korean languages.
- c) That the following is a correct translation into English of U.S. Provisional Patent Application No. 60/464,111, filed April 21, 2003, and I make the solemn declaration conscientiously believing the same to be true.

April 16, 2004

Date

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TITLE OF THE INVENTION

COMPLEX VIDEO/AUDIO DATA RECORDING/REPRODUCING APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention generally relates to a complex video/audio data recording/reproducing apparatus, and more particularly, it relates to a complex video/audio data recording/reproducing apparatus comprising multiple product units, such as a digital camcorder, a digital still camera, an MP3 player, a voice recorder, etc., which are integrated into one package.

2. Description of the Related Art

[0002] Generally, a digital still camera (DSC) converts an image incident through a lens into a digital signal, and stores it in a recording medium such as a hard disk or memory card. Such a digital still camera is highly compatible with a personal computer (PC), the digital image is easy to edit and adjust, and easy to transfer the digital images to the external computers connected to the DSC. Also, the digital still camera, having the same structure as a general camera, is easy to carry. The digital still camera is provided with a lens device, a memory device, a signal converting device and a display device. Due to a limited image recording capacity, the digital still camera is usually used in taking pictures of still objects. Although the digital still cameras can take motion pictures up to a certain limited volume, taking motion pictures for a long period of time is almost impossible. Particularly, the inability to record/reproduce sound during recording/reproducing of motion pictures limits the digital still cameras from recording/reproducing motion pictures. In order to compensate for this shortcoming, a recording/reproducing apparatus such as a camcorder, which is capable of recording images and sounds of an object in the recording medium such as a tape and reproducing the recorded data, is widely used.

[0003] The camcorder is provided with a lens device, a signal converting device, a deck device for recording/reproducing images being taken, and a display device. The camcorder usually uses a cassette tape as a recording medium, which is mounted on a deck device to record motion pictures as picked up. Further, the camcorder is provided with a microphone device and a speaker device for audio input/output, and can record on the cassette tape for

more than 1 hour. The camcorder is also provided with a function of taking still pictures, however, at a lower picture quality as compared to the digital still camera. Also, since the camcorder has more complex functions that subsequently require complex structure, it is relatively bulkier and more expensive than the digital still camera.

[0004] Accordingly, many people are buying the digital still camera and the camcorder together, because one lacks the function or quality of the other. This causes a financial burden to the customers. Besides, users have to carry the digital still cameras and the camcorders together, which is quite inconvenient.

[0005] Accordingly, there is an increased need for a new type of a complex video/audio data recording/reproducing apparatus capable of multiple functions. For example, a complex video/audio data recording/reproducing apparatus, adopting digital technology such as MP3 player function or voice recorder function, in a single product, is needed.

[0006] It would be advantageous if this new type of complex video/audio data recording/reproducing apparatus digitizes internal signal processing so as to perform multiple functions with efficiency. Additionally, because image data of multiple dimensions would contain relatively greater information when compared with general data, a data compression technology, which can provide high compression rate, is required to digitalize the vast data amount.

[0007] Furthermore, in order to store and extract a vast amount of data with speed, it is also advantageous that a hard disk drive is used as a recording medium.

SUMMARY OF THE INVENTION

[0008] The present invention has been made to overcome the problems as mentioned above, and accordingly, it is an object of the present invention to provide a complex video/audio data recording/reproducing apparatus efficiently providing image data processing functions such as a camcorder and a digital camera, and a voice data processing apparatus such as an MP3 player and a voice recorder, in a single integrated package, thereby providing users with portability, compactness and economic advantage.

[0009] It is another object of the present invention to provide a complex video/audio data recording/reproducing apparatus which can be used both in portable mode and integrated mode,

thereby providing users with economical advantage.

[0010] In order to accomplish the above objects of the present invention, a complex video/audio data recording/reproducing apparatus is provided, comprising: a body housing therein a controller and a data recording medium, and being provided with a plurality of manipulation buttons and a battery, respectively being connected with the controller; a camera unit provided at a side of the body, and being capable of transmitting and receiving signals with the controller; a display unit capable of displacing with respect to the body, and transmitting and receiving signals with the controller; and an audio data processing unit provided for signal transmission and reception with the controller and the data recording medium, wherein the data recording medium stores therein signal data inputted from the camera unit, the audio data processing unit and from outside, the controller controls such that the stored data of the data recording medium can be outputted through the display unit and the audio data processing unit in accordance with the manipulation on the manipulation buttons, and that signal data inputted from the camera unit, the audio data processing unit and the outside can be outputted through the display unit and the audio data processing unit, respectively.

[0011] The data recording medium is a hard disk drive, and the data recording medium further comprises a removable storage which is removably mounted in the body.

[0012] The body is provided with a window through which the mounting and dismounting of the removable storage can be confirmed, and a battery receiving area is provided at a rear face of the body to receive the battery, and a rear cover is detachably mounted on the body to protect the battery being mounted on the battery receiving area.

[0013] The camera unit comprises a cylindrical outer casing which houses therein a photographing unit to photoelectrically convert an optical image focused through a lens into an electric signal, and a zoom button manipulated by sliding motion along an arc guide rail formed on a side of the cylindrical outer casing to adjust a focal status of the lens.

[0014] The display unit is connected to the body, rotatably with respect to the body about at least two rotational axes which are arranged in perpendicular relation to each other, and the display unit is supported by a rotatable block foldable with respect to the body so that the display unit is foldable with respect to the body, and freely rotatable with respect to the rotatable block.

[0015] In order to accomplish the above objects, a complex video/audio data recording/reproducing apparatus is also provided, comprising: a photographing unit to photoelectrically convert an optical image focused through a lens into electric signals, and output the electric signals; a NT/PAL decoder to convert standard television signals into digital data and output the same; a storage medium to store data therein; a NT/PAL encoder to convert incoming digital data into standard television signals and output the same; and a control unit to convert the electric signals from the photographing unit into digital data, compress one among the digital data and the data output from the NT/PAL decoder and store the compressed data in the storage medium, and re-extend the stored compressed data of the storage medium and output to the NT/PAL encoder.

[0016] The photographing unit uses a charge coupled device (CCD) as a photographing element, and the standard television signal is one of NTSC (National Television System Committee) and PAL (Phase Alternation Line).

[0017] The storage medium is a hard disk drive, and preferably, a 1-inch hard disk drive for compactness. Additionally, the storage medium may be a memory stick.

[0018] The control unit comprises: a video processing unit to convert electric signals from the photographing unit into digital data, and output one among the converted digital data and the data output from the NT/PAL decoder; a MPEG4 CODEC unit to compress and re-extend incoming data by MPEG4 format; a MUX/SRC unit to interface data transmission with the NT/PAL encoder; a memory stick/CF interface unit to interface data transmission with the storage medium; and a CPU to control such that the data output from the video processing unit is compressed at the MPEG4 CODEC and stored in the storage medium, and the compressed stored data of the storage medium is re-extended by the MPEG4 CODEC unit and outputted to the MUX/SRC unit. The control unit may be made of a single chip.

[0019] An audio interface unit may be further provided to interface with an external input/output audio signal and an external audio device, and the control unit controls such that the input data from the audio interface unit is compressed and stored in the storage medium, and the compressed stored data of the storage medium is re-extended and outputted to the audio interface unit.

[0020] A USB unit may be further provided to provide interface of USB (Universal Serial Bus) method, and the controller controls such that the data from the USB unit is compressed and

stored in the storage medium, and the compressed stored data of the storage medium is re-extended and outputted to one among the USB unit, the audio interface unit and the NT/PAL decoder.

[0021] A memory device may be further provided, and the control unit controls such that a predetermined data is stored in the memory device during operation, and the stored predetermined data of the memory device is read out. The memory device is at least one of a SDRAM and a flash memory.

[0022] A power supply unit may be further provided to selectively supply power to a module which is required for the operation.

[0023] In order to accomplish the above objects of the present invention, a complex video/audio data recording/reproducing apparatus according to another aspect of the present invention is provided, comprising: a body housing therein a controller and a data recording medium, and being provided with a plurality of manipulation buttons and a battery, respectively being connected with the controller; a camera unit provided at a side of the body, and being capable of transmitting and receiving signals with the controller; a display unit capable of displacing with respect to the body, and transmitting and receiving signals with the controller; an audio data processing unit provided for signal transmission and reception with the controller and the data recording medium; and a station connecting the body with an external data processing device for signal transmission and reception, and connecting the battery for recharging, wherein the data recording medium stores therein signal data inputted from the camera unit, the audio data processing unit and from outside, the controller controls such that the stored data of the data recording medium can be outputted through the display unit and the audio data processing unit in accordance with the manipulation on the manipulation buttons, and that signal data inputted from the camera unit, the audio data processing unit and the outside can be outputted through the display unit and the audio data processing unit, respectively.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] FIG. 1 is a schematic perspective view of a complex video/audio data recording/reproducing apparatus, according to an embodiment of the present invention;

[0025] FIG. 2 is a rear perspective view of the complex video/audio data

recording/reproducing apparatus shown in FIG. 1;

[0026] FIG. 3 is a rear perspective view showing the main portion of the complex video/audio data recording/reproducing apparatus shown in FIG. 1.

[0027] FIGS. 4A and 4B are schematic perspective views showing use of the complex video/audio data recording/reproducing apparatus according to an embodiment of the present invention;

[0028] FIG. 5 is a perspective appearance view of a complex video/audio data recording/reproducing apparatus, according to another embodiment of the present invention;

[0029] FIG. 6 is a rear perspective view of the apparatus shown in FIG. 6;

[0030] FIG. 7 is a functional block diagram of the complex video/audio data recording/reproducing apparatus according to an embodiment of the present invention; and

[0031] FIG. 8 is a functional block diagram of the control unit shown in FIG. 7.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0032] Reference will now be made in detail to the embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. The embodiments are described below to explain the present invention by referring to the figures.

[0033] Referring to FIGS. 1 to 2, a complex video/audio data recording/reproducing apparatus 10, according to an embodiment of the present invention, comprises a body 11, a camera unit 13, a display unit 15, and an audio data processing unit (not shown). The body 11 houses therein a controller (not shown; see FIGS. 7 and 8) and a data recording medium (not shown), and is provided with a plurality of manipulation buttons and a battery, respectively being connected with the controller. The camera unit 13 is provided at a side of the body 11, and is capable of signal transmission and reception with the controller. The display unit 15 is capable of displacing with respect to the body 11, and transmits and receives signals with the controller. The audio data processing unit is capable of transmitting and receiving signals with the controller and the data recording medium.

[0034] The body 11 houses therein a compact hard disk drive as a main data recording

medium.

[0035] Referring to FIG. 1, the body 11 also has a slot 11a formed in a side to which removable storage 20 such as a smart card or a memory stick is mounted. The reference numeral 11b represents a window through which mounting and dismounting of the removable storage 20 can be confirmed. Also, the reference numeral 17 represents a band with which the user's hand can be securely placed on the body 11 during use. The reference symbol 'B' of FIG. 1 represents function manipulation buttons, which are substantially same as those provided to a general digital camcorder. The reference symbol 'M' represents a mode switch, which, upon manipulation, changes various functional modes such as digital still camera function and MP3 player function. The reference symbol 'V' represents a dial switch which is provided for various adjustments such as sound adjustment.

[0036] Meanwhile, referring to FIG. 3, the body 11 is provided with a battery receiving area 11c to which a battery 30 is removably installed, and a detachable rear cover 12 to protect the battery 30 mounted in the battery receiving area 11c.

[0037] The camera unit 13 includes a cylindrical outer casing housing therein a photographing unit (not shown; see FIGS. 7 and 8) to photoelectrically convert the optical image focused through the lens 13a into electric signals, and a zoom button 13b manipulated by sliding motion along an arc guide rail (not shown) formed on a side of the outer casing to adjust focal status of the lens 13a.

[0038] As shown in FIGS. 4A and 4B, the display unit 15 is connected to the body 11 in a manner such that the display unit 15 rotates with respect to the body 11 about a pair of rotary axes P1, P2, which are in a perpendicular relation. Therefore, the display unit 15 is supported by a rotary block 15a which is foldable with respect to the body 11 so that the display unit 15 can be freely folded with respect to the body 11 while it is also freely rotated with respect to the rotary block 15a.

[0039] The display unit 15 may use an LCD monitor, and it can function as a viewfinder displaying the object of the shooting, or it can enable viewing of the captured images during reproducing.

[0040] Meanwhile, referring to FIGS. 5 and 6, according to another embodiment of the present invention, the body 11 of the video/audio recording/reproducing apparatus as described

above with reference to FIGS. 1 through 4B is connectable with external data processors or apparatuses, such as a TV set, an audio set, etc., for signal transmission/reception, and at the same time, is provided with a station 50 to receive a battery 30 (see FIG. 3) for recharging.

[0041] As shown, the station 50 is provided with a connection terminal 51 for being connected for signal transfer with a connector C provided at a side of the body 11 during the mounting of the body 11. In FIG. 7, a battery recharging unit (battery charger) 52 recharges the battery 30. General connectors 50a, 50b, 50c, 50d, 50e, such as an SVHS terminal, an AV terminal, connect an external data processor and the station 50. The reference symbol 'P' represents a series of manipulation buttons for the performance of general functions with the body 11 of the complex video/audio data recording/reproducing apparatus 10 being received in the station 50. The reference symbols 'D' and 'd' represent a signal receiving unit to receive manipulation signals from the remote controller 70.

[0042] FIG. 7 is a functional block diagram of the complex video/audio data recording/reproducing apparatuses according to an embodiment of the present invention. Referring to FIG. 7, the complex video/audio data recording/reproducing apparatus comprises a CCD (charge coupled device) 100, an LCD driver 105, an NT/PAL encoder 110, an NT/PAL decoder 115, a TG/CDS/AGC (timing generation/correlated double sampler/auto gain control) 120, a lens driver 125, a mode control unit 130, a V.driver 135, a function block unit 140, a flash memory 145, a power supply 150, an audio interface 155, a USB unit 160, a TIC (transition IC) 165, an HDD (hard disc drive) 170, an SDRAM (synchronous dynamic random access memory) 175 and a control unit 200.

[0043] As described above, the CCD 100 converts the optical image input through the lens 13a into electric signals and outputs the electrical signals. In other words, the optical image of the object is focused on the photosensitive surface of the CCD 100 by the photography lens 13a, and the CCD 100 converts the image on the photosensitive surface into an electric signal and outputs the electric signal as a 1-dimensional electric signal through horizontal and vertical scanning.

[0044] The LCD driver 105 drives (controls) the LCD monitor 13 of the display unit 15. The NT/PAL encoder 110 converts a signal output from the control unit 200 into a video signal according to the NTSC (National television system committee) scheme or the PAL (Phase alternation line) scheme, and outputs the resultant signal. The NT/PAL decoder 115 converts

the NTSC or PAL signals input through the video line input terminal into digital data, and transmits the converted data to the control unit 200. Both the NTSC and the PAL are standard television outputting schemes, and the NTSC is more popular in Korea while PAL is more popular in the European countries.

[0045] The TG/CDS/AGC 120 removes noise from the CCD 100 signal by using a correlated double sampling circuit, and transmits the signal, which has passed an auto gain control circuit, to the control unit 200. The lens driver 125 controls a lens driving circuit of the lens 13a to adjust various factors, such as focal point and openness, of the aperture to a desirable degree for photographing. The V.driver 135 refers to a vertical driver of the CCD 100, and the mode control unit 130 controls the LCD driver 105, the lens driver 125 and the V.driver 135 according to a mode selected by the user.

[0046] The function block unit 140 stores the operation information about the operation selected by the user by manipulating the manipulating buttons of the apparatus 10, such as the manipulation buttons B and P, and sends the operation information to the mode control unit 130 so that the complex video/audio data recording/reproducing apparatus 10 is driven in correspondence to the operation information as selected. The flash memory 145 stores programs, such as a system program necessary for the booting program and the apparatus operation, critical data which have to be maintained even after a power-off, and application programs. The power supply 150 supplies power for the operation of the apparatus 10.

[0047] The audio interface 155 performs interfacing for the input/output of the external audio signals, and drives the audio equipments, such as a headphone and a microphone. The USB (universal serial bus) 160 is a serial port providing an external computer (computing device), an audio player, and a printer, with a plug-and-play interface.

[0048] The TIC (transition IC) 165 matches a signal between the control unit 200 and the HDD 170, and the HDD 170 stores data which are compressed by the control unit 200. As for the HDD 170, typically, a 1-inch hard disc drive is used for the compactness of the apparatus 10. The SDRAM 175 serves as a buffer where necessary data for operating the apparatus 10 are stored.

[0049] The control unit 200 performs signal conversion, such as A/D conversion with respect to the input signal from the TG/CDS/AGC 120, and from the NT/PAL decoder 115 (i.e., signals input from the video line input). The control unit 200 compresses the converted data input from

the TG/CDS/AGC 120 and the NT/PAL decoder 115, the audio interface 155 and the USB 160, and stores the compressed data in the HDD 170 through the TIC 165. A memory stick may be used as a storage medium instead of the HDD 170. During reproducing, the control unit 200 reads the data stored in the HDD 170 and outputs the read data, for example, to the NT/PAL encoder 110 or to the audio interface 155. The control unit 200 also controls other general operations of the apparatus 10.

[0050] FIG. 8 is a detailed functional block diagram of the control unit 200 of FIG. 7.

[0051] Referring to FIG. 8, the control unit 200 comprises a GUI 205, a MUX/SRC (multiplexer/system resource controller) 210, a MPEG4 (Motion picture experts group 4) CODEC (compressor/decompressor) 215, a DMA 220, a memory stick/CF interface 225, a USB interface 230, a video processor 235, a CPU 240, an audio encoder 245, an audio decoder 250 and a system bus 260.

[0052] The GUI 205 stores data, such as graphic data required for establishment of the GUI (Graphical user interface) environment, and the MUX/SRC 210 controls the data output to the NT/PAL encoder 110, and, if necessary, may output the data mixed with the data stored in the GUI 205.

[0053] The MPEG4 CODEC 215 compresses the incoming data in the MPEG4 scheme, and, if necessary, re-extends the compressed data. The MPEG4 is an A/V (Audio/Video) standard coding scheme which enables easy data transmission with the communication media of narrow bandwidth and bi-directional multimedia communication. The MPEG4 codes video signals based on the content of the video instead of using block-wise coding in the H.261, JPEG, MPEG1 and MPEG2.

[0054] The USB interface 230 interfaces with the USB unit 160.

[0055] The video processor 235 performs signal conversion, such as the A/D conversion with respect to the incoming signals from the TG/CDS/AGC 120, and transmits to the system bus 260 one of the converted data and the data input through the NT/PAL decoder 115. The audio encoder 245 and the audio decoder 250, respectively, perform encoding and decoding necessary for the data transmission/reception of the audio interface 155.

[0056] The GUI 205, the MUX/SRC 210, the MPEG4 CODEC 215, the DMA 220, the memory stick/CF interface 225, the USB interface 230, the video processor 235 and the CPU

240 are connected through the system bus 260, and the CPU 240 controls the overall operation of the control unit 200. For compactness, typically, the control unit 200 is formed as a single chip.

[0057] Accordingly, the complex video/audio data recording/reproducing apparatus of the present invention can efficiently perform various functions, and the following description is about the apparatus 10 operating as a digital camcorder.

[0058] The data captured through the lens 13a is photoelectrically converted by the CCD 110 and transmitted to the control unit 200 via the TG/CDS/AGC 120. The video processor 235 of the control unit 200 converts the incoming analog video signal into digital data, and transmits the digital data to the MPEG4 CODEC 215 through the system bus 260. The MPEG4 CODEC 215 compresses the received digital data in MPEG4 scheme, and transmits the compressed data to the memory stick/CF interface 225. The memory stick/CF interface 225 stores the received compressed data in the HDD 170 through the TIC 165. As a result, images of the object are recorded.

[0059] On reproduction, the compressed data, being stored in the HDD 170, is re-extended in the MPEG4 CODEC 215 and transmitted to the NT/PAL encoder 110 through the MUX/SRC 210. The NT/PAL encoder 110 displays the received signals on the LCD monitor 13 mounted on the body 11 through the LCD driver 105. Further, the images captured may be displayed through an external display device by transmitting the signals to the TV or an S-JACK (super JACK) terminal, such as the general connectors 50a-50e (FIG. 7). Accordingly, the captured motion pictures or still images are reproduced.

[0060] Input through the external video line is transmitted to the control unit 200 through the NT/PAL decoder 115, and compressed and stored in the HDD 170 through the above-described processes. When necessary, the data can be re-extended and reproduced from the HDD 170. Therefore, the contents displayed through the TV may be recorded and reproduced by the apparatus 10. Further, it is possible to display the images of the object of the current shooting without having data compression, i.e., by directly outputting the data captured through the lens 13a to the NT/PAL encoder 110.

[0061] Meanwhile, in the complex video/audio data recording/reproducing apparatus operating as a voice recorder or an MP3 player, audio data input through the audio interface 155 is compressed at the MPEG4 CODEC 215 and stored in the HDD 170 through the TIC 165

or in the memory stick. The audio signal stored in the storage mediums, such as the HDD 170 is re-extended by the MPEG4 CODEC 215 and transmitted through the audio interface 155 to the headphone, or another external audio device. Accordingly, the complex video/audio data recording/reproducing apparatus can operate as a voice recorder or an MP3 player.

[0062] The complex video/audio data recording/reproducing apparatus may also be connected to an external computer through the USB unit 160, to receive necessary data or transmit data to the external computer. Accordingly, the HDD 170 allows the complex video/audio data recording/reproducing apparatus to operate as a data storage device. The complex video/audio data recording/reproducing apparatus may be also used for other functions, such as a web camera if connected to the computer with the USB unit 160.

[0063] As described above, the complex video/audio data recording/reproducing apparatus according to the present invention can serve various functions, such as the functions of a camcorder, a digital camera, a voice recorder, an MP3 player, a data storage device and a web camera, and many others in various fields.

[0064] As described above with reference to a complex video/audio data recording/reproducing apparatus according to the present invention, signals are internally digitalized, and compressed and re-extended by using MPEG4, and therefore, the apparatus can be operated as a camcorder, a digital camera, a voice recorder, an MP3 player, a storage, and a web camera. Because the complex video/audio data recording/reproducing apparatus can be provided as a single package of video and image data processors, such as a camcorder processor and a digital camera processor, along with audio data processors, such as an MP3 player and a voice recorder, compactness is achieved. Additionally, by using a station, the complex video/audio data recording/reproducing apparatus can be used both in a portable mode and in an integrated mode.

[0065] Although a few embodiments of the present invention have been described, it will be understood by those skilled in the art that the present invention should not be limited to the described embodiments, but various changes and modifications can be made within the spirit and scope of the present invention as defined by the appended claims and their equivalents.

CLAIMS

1. A complex video/audio data recording/reproducing apparatus, comprising:
 - a body housing therein a controller and a data recording medium, and being provided with a plurality of manipulation buttons and a battery, respectively being connected with the controller;
 - a camera unit provided at a side of the body, and being capable of transmitting and receiving signals with the controller;
 - a display unit capable of displacing with respect to the body, and transmitting and receiving signals with the controller; and
 - an audio data processing unit provided for signal transmission and reception with the controller and the data recording medium, wherein
 - the data recording medium stores therein signal data inputted from the camera unit, the audio data processing unit and from outside,
 - the controller controls such that the stored data of the data recording medium can be outputted through the display unit and the audio data processing unit in accordance with the manipulation on the manipulation buttons, and that signal data inputted from the camera unit, the audio data processing unit and the outside can be outputted through the display unit and the audio data processing unit, respectively.
2. The complex video/audio data recording/reproducing apparatus of claim 1, wherein the data recording medium is a hard disk drive.
3. The complex video/audio data recording/reproducing apparatus of claim 1, wherein the data recording medium further comprises a removable storage which is removably mounted in the body.
4. The complex video/audio data recording/reproducing apparatus of claim 3, wherein the body is provided with a window through which the mounting and dismounting of the removable storage can be confirmed.
5. The complex video/audio data recording/reproducing apparatus of claim 1, wherein a battery receiving area is provided at a rear face of the body to receive the battery, and a rear cover is detachably mounted on the body to protect the battery being mounted on the

battery receiving area.

6. The complex video/audio data recording/reproducing apparatus of claim 1, wherein the camera unit comprises a cylindrical outer casing which houses therein a photographing unit to photoelectrically convert an optical image focused through a lens into an electric signal, and a zoom button manipulated by sliding motion along an arc guide rail formed on a side of the cylindrical outer casing to adjust a focal status of the lens.

7. The complex video/audio data recording/reproducing apparatus of claim 1, wherein the display unit is connected to the body, rotatably with respect to the body about at least two rotational axes which are arranged in perpendicular relation to each other.

8. The complex video/audio data recording/reproducing apparatus of claim 7, wherein the display unit is supported by a rotatable block foldable with respect to the body so that the display unit is foldable with respect to the body, and freely rotatable with respect to the rotatable block.

9. A complex video/audio data recording/reproducing apparatus, comprising:
a body housing therein a controller and a data recording medium, and being provided with a plurality of manipulation buttons and a battery, respectively being connected with the controller;

a camera unit provided at a side of the body, and being capable of transmitting and receiving signals with the controller;

a display unit capable of displacing with respect to the body, and transmitting and receiving signals with the controller;

an audio data processing unit provided for signal transmission and reception with the controller and the data recording medium; and

a station connecting the body with an external data processing device for signal transmission and reception, and connecting the battery for recharging, wherein

the data recording medium stores therein signal data inputted from the camera unit, the audio data processing unit and from outside,

the controller controls such that the stored data of the data recording medium can be outputted through the display unit and the audio data processing unit in accordance with the manipulation on the manipulation buttons, and that signal data inputted from the camera unit,

the audio data processing unit and the outside can be outputted through the display unit and the audio data processing unit, respectively.

10. A complex video/audio data recording/reproducing apparatus, comprising:
a photographing unit to photoelectrically convert an optical image focused through a lens into electric signals; and output the electric signals;
a NT/PAL decoder to convert standard television signals into digital data and output the same;
a storage medium to store data therein;
a NT/PAL encoder to convert incoming digital data into standard television signals and output the same; and
a control unit to convert the electric signals from the photographing unit into digital data, compress one among the digital data and the data output from the NT/PAL decoder and store the compressed data in the storage medium, and re-extend the stored compressed data of the storage medium and output to the NT/PAL encoder.

11. The complex video/audio data recording/reproducing apparatus of claim 10, wherein the photographing unit uses a charge coupled device (CCD) as a photographing element.

12. The complex video/audio data recording/reproducing apparatus of claim 10, wherein the standard television signal is one of NTSC (National Television System Committee) and PAL (Phase Alternation Line).

13. The complex video/audio data recording/reproducing apparatus of claim 10, wherein the storage medium is a hard disk drive.

14. The complex video/audio data recording/reproducing apparatus of claim 13, wherein the hard disk drive is a 1-inch hard disk drive.

15. The complex video/audio data recording/reproducing apparatus of claim 10, wherein the storage medium is a memory stick.

16. The complex video/audio data recording/reproducing apparatus of claim 10,

wherein the control unit comprises:

a video processing unit to convert electric signals from the photographing unit into digital data, and output one among the converted digital data and the data output from the NT/PAL decoder;

a MPEG4 CODEC unit to compress and re-extend incoming data by MPEG4 format;

a MUX/SRC unit to interface data transmission with the NT/PAL encoder;

a memory stick/CF interface unit to interface data transmission with the storage medium;

and

a CPU to control such that the data output from the video processing unit is compressed at the MPEG4 CODEC and stored in the storage medium, and the compressed stored data of the storage medium is re-extended by the MPEG4 CODEC unit and outputted to the MUX/SRC unit.

17. The complex video/audio data recording/reproducing apparatus of claim 16, wherein the control unit is made of a single chip.

18 The complex video/audio data recording/reproducing apparatus of claim 10, further comprising an audio interface unit to interface with an external input/output audio signal and an external audio device, and the control unit controls such that the input data from the audio interface unit is compressed and stored in the storage medium, and the compressed stored data of the storage medium is re-extended and outputted to the audio interface unit.

19. The complex video/audio data recording/reproducing apparatus of claim 18, further comprising a USB unit to provide interface of USB (Universal Serial Bus) method, and the controller controls such that the data from the USB unit is compressed and stored in the storage medium, and the compressed stored data of the storage medium is re-extended and outputted to one among the USB unit, the audio interface unit and the NT/PAL decoder.

20. The complex video/audio data recording/reproducing apparatus of claim 10, further comprising a memory device, and the control unit controls such that a predetermined data is stored in the memory device during operation, and the stored predetermined data of the memory device is read out.

21. The complex video/audio data recording/reproducing apparatus of claim 20,

wherein the memory device is at least one of a SDRAM and a flash memory.

22. The complex video/audio data recording/reproducing apparatus of claim 10, further comprising a power supply unit to selectively supply power to a module which is required for the operation.

ABSTRACT OF DISCLOSURE

[0066] A complex video/audio data recording/reproducing apparatus includes a body having a control unit and a data recording medium therein, a camera unit provided at a side of the body, a display unit variable in position with respect to the body, and an audio data processing unit. A control unit is constructed in a single chip, and a micro-compact hard disc drive is used as a main data recording medium, so that various product units, such as a digital camcorder, a digital still camera, an MP3 player and a voice recorder, are provided in the apparatus, thereby providing a compact-sized and portable video/audio recording/reproducing apparatus realizing various functions.

FIG. 1

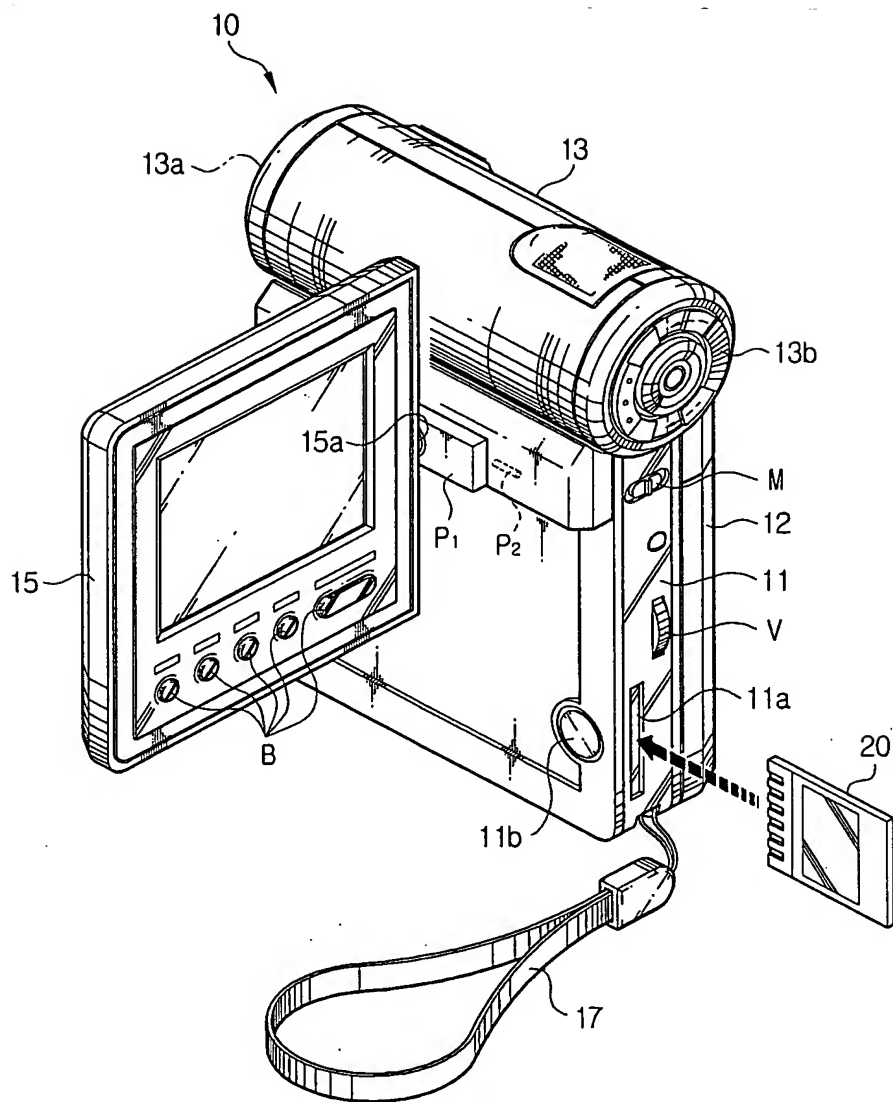


FIG.2

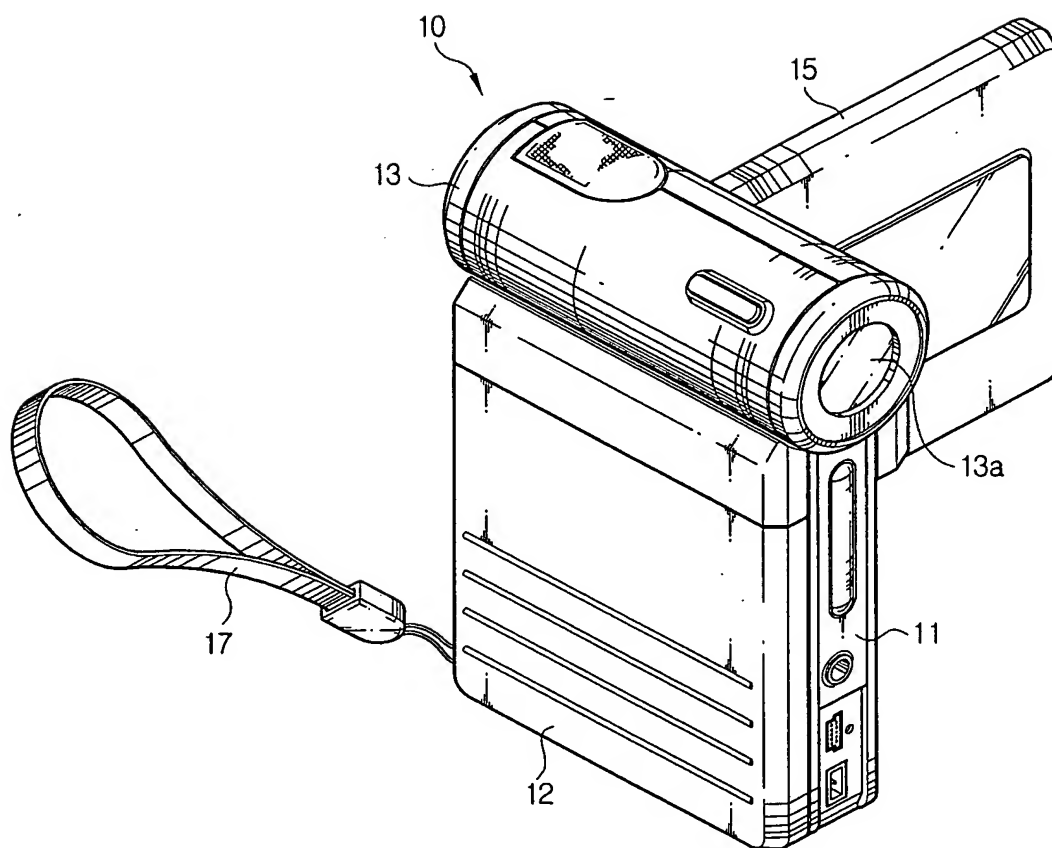


FIG.3A

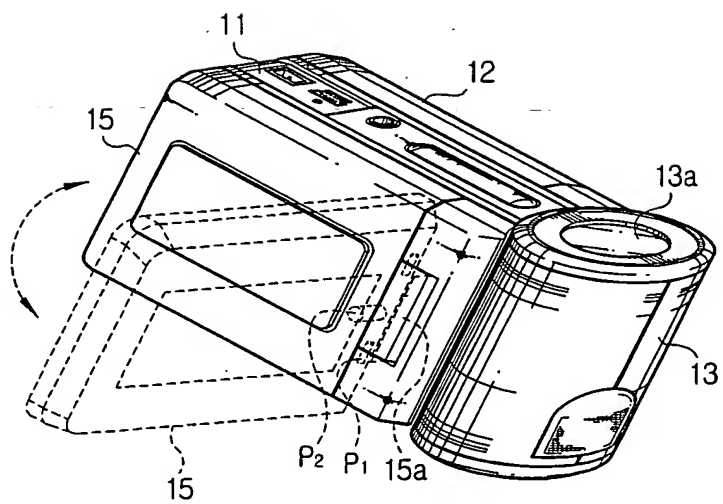


FIG.3B

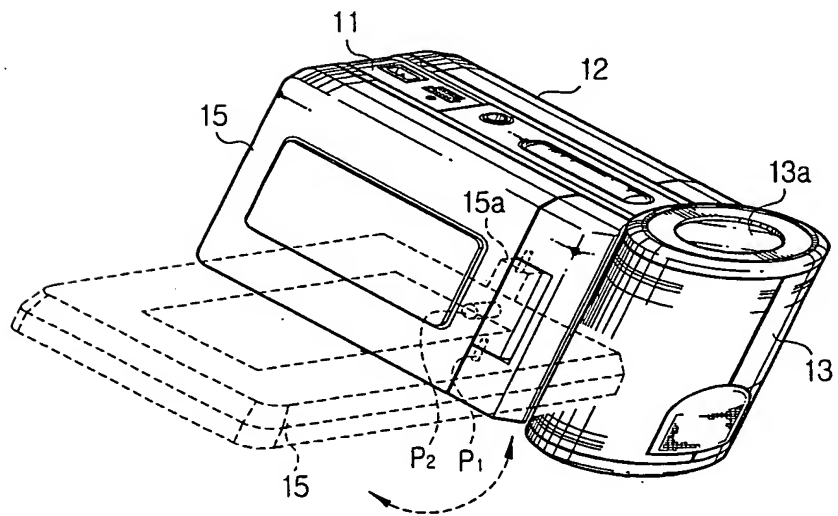


FIG. 4

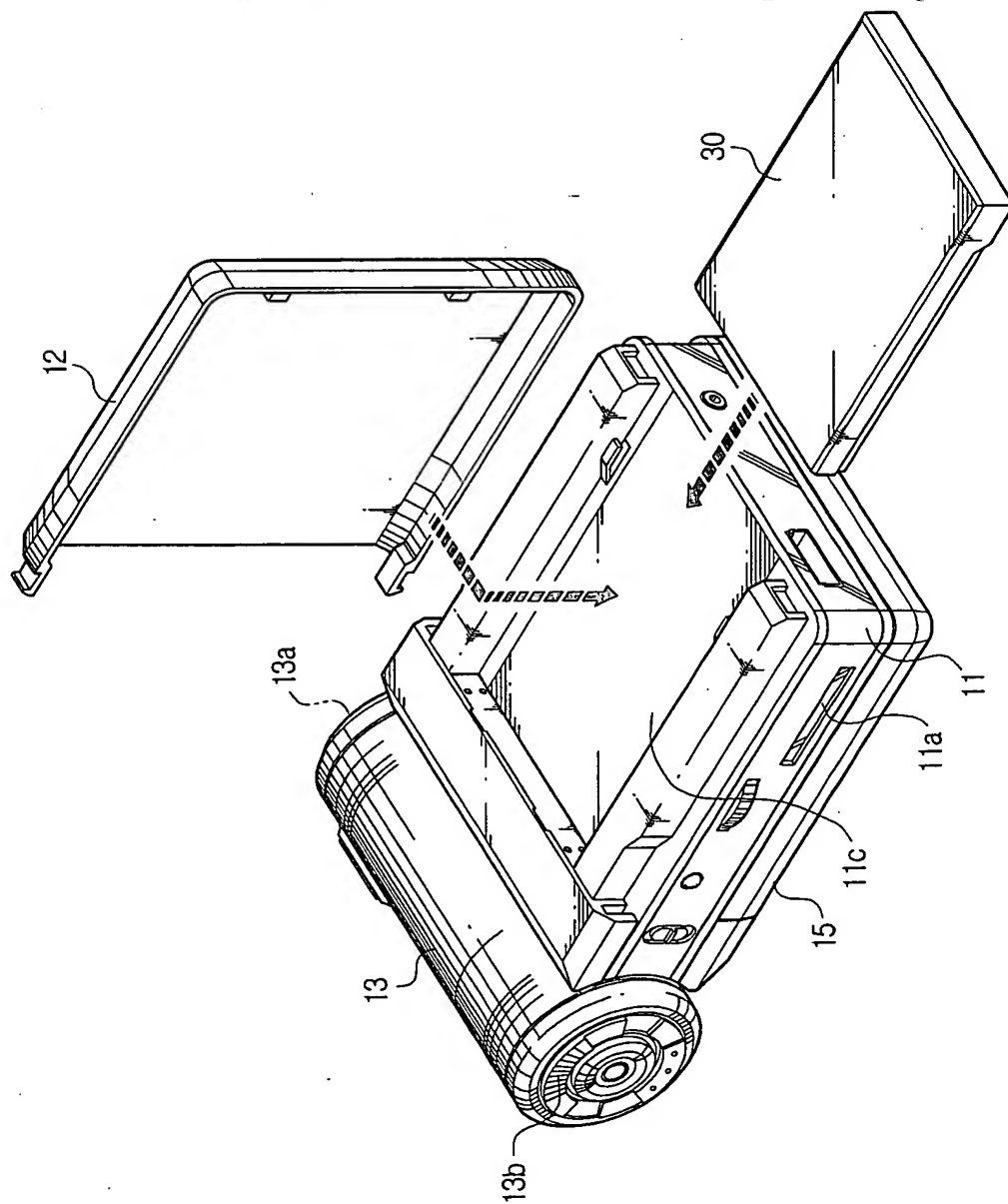


FIG. 5

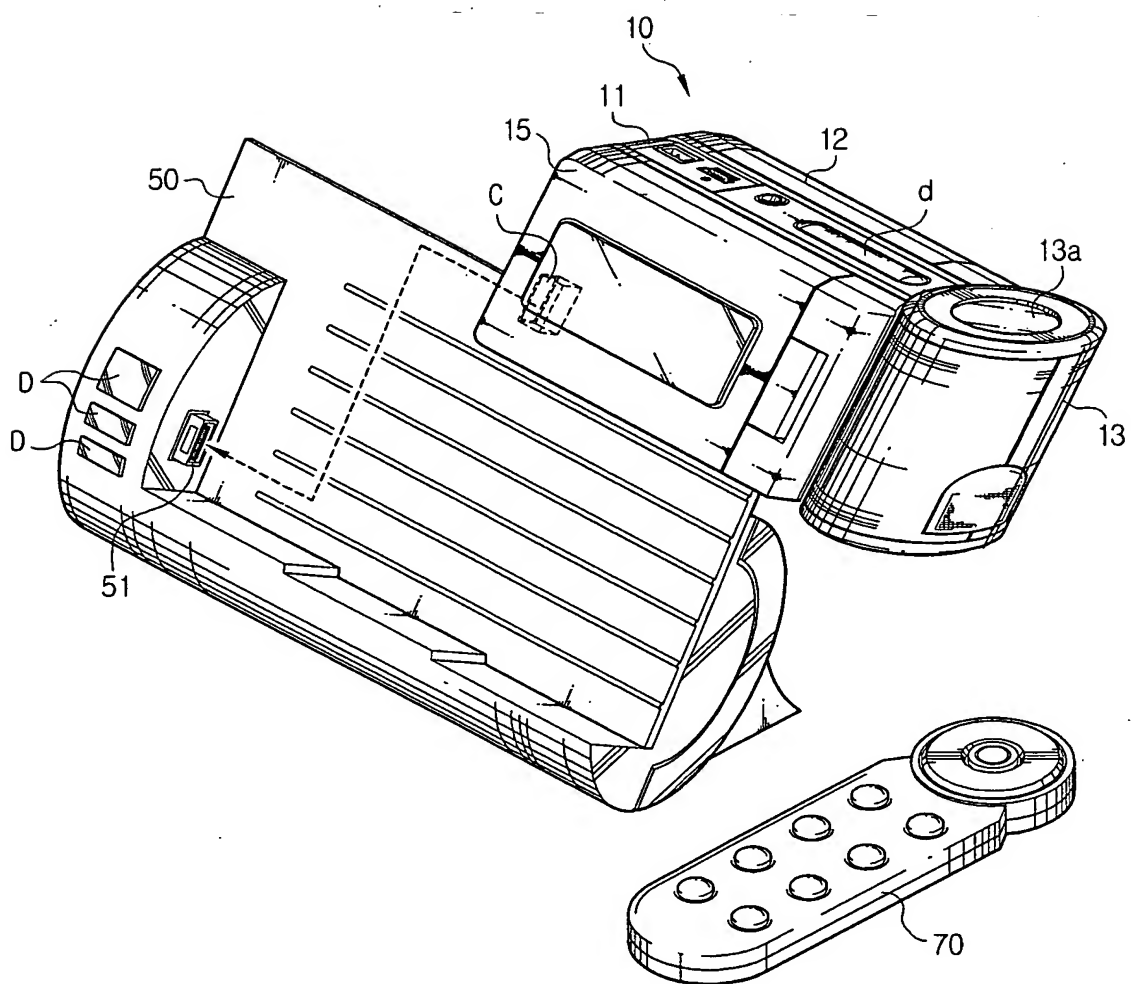


FIG. 6

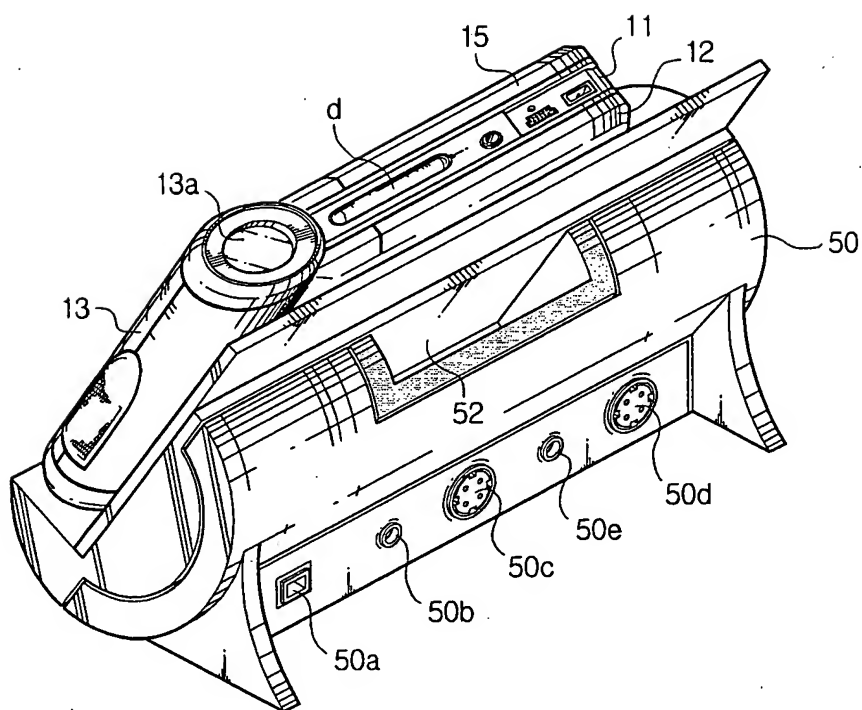


FIG. 7

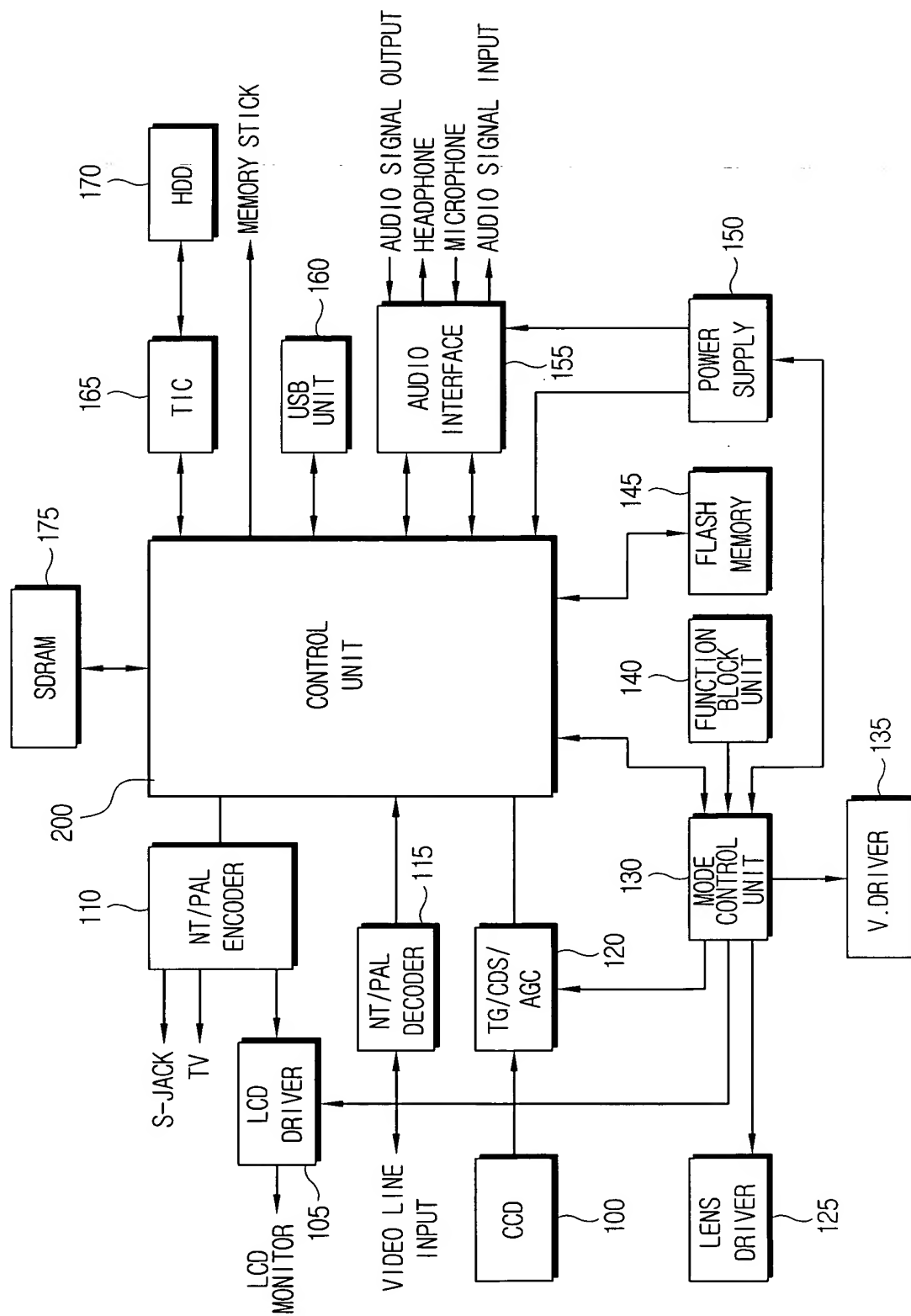


FIG. 8

